G/030/62/002/007/004/004
I030/I230

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TITLE: Measurement of the coherent scattering amplitudes of Dysprosium and Thulium for thermal for thermal neutrons

PERIODICAL: Physica status solidi, V.2, no.7, 1962. K164-K167

TEXT: The knowledge of the nuclear scattering iron sections, a prerequisite for the investigation of magnetic structures by means of neutron diffraction, of rare earth is of interest in view of the increasing use of these elements for the development of magnetic materials. In order to determine the coherent scattering amplitudes of Dy and Tm, neutron diffraction diagrams of Dy_2O_3 and Tm_2O_3 respectively were obtained, with $\lambda = 1{,}197 \pm 0{,}003$ kX. Measurements were standartized relative to a Nickel preparation, using σ_{coh} =

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... the coherent scattering...

(13,2 ± 0,2) barns for Ni. Atomic parameters and temperature factor of Dy_2O_3 and Tm_2O_3 are assumed to be identical to the values published for Ho_2O_3 (Koehler, Wollan and Wilkinson, Phys. Rev., 110, 37, (1958)). From the intensity of the 222 reflections values for the coherent scattering amplitudes of $1{,}72 \pm 0{,}05 \cdot 10^{-12}$ cm for Dy and $0{,}69 \pm 0{,}02 \cdot 10^{-12}$ cm for Tm are deduced. Structure factors calculated with these values are compatible with those determined from the intensities of the measured diffraction pattern. There are 2 tables and 2 figures.

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SUBMITTED: June 12, 1962